CASE HP/5-21550/A/CONT

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Lynn Girolamo (Type or print name) Lynn Girolamo (Signature) 10/21/03 (Date)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE APPLICATION OF
DIETMAR HÜGLIN ET AL
APPLICATION NO: 10/016,903
FILED: DECEMBER 14, 2001
FOR: USE OF NANODISPERSIONS IN COSMETIC END FORMULATIONS

Group Art Unit: 1615
Examiner: G. S. Kishore

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

This appeal is from the final rejection mailed from the PTO on June 24, 2003.

The Notice of Appeal was mailed to the Patent and Trademark Office by first class mail with Certificate of Mailing on July 17, 2003. The return receipt postcard indicates the Patent and Trademark Office received the Notice of Appeal on July 21, 2003. Hence this brief is being timely filed with an accompanying petition for extension of time to October 21, 2003.

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(1) REAL PARTY OF INTEREST

The real party of interest is:

Ciba Specialty Chemicals Corp.
P.O. Box 2005
540 White Plains Road
Tarrytown, New York 10591

(2) RELATED APPEALS AND INTERFERENCES

To the knowledge of the undersigned, there are no related appeals and/or interferences.

(3) STATUS OF THE CLAIMS

Claims 1-31 and 34 are cancelled. Claims 32-33 and 35-43 are pending. Claims 32-33 and 35-43 were finally rejected.

(4) STATUS OF AMENDMENTS

The Amendment after Final Rejection cancelled claim 34 and amended 32. The Advisory Action mailed on July 2, 2003 indicated said amendment would be entered on filing a Notice of Appeal and Appeal Brief. Hence the claims on appeal are claims 32-33 and 35-43.

(5) SUMMARY OF THE INVENTION

As taught on page 1, paragraph 1, of the disclosure, the present invention relates to the preparation and use of specific nanodispersions in cosmetic end formulations, to cosmetic end formulations comprising said nanodispersions and to the different cosmetic uses of these end formulations.

Surprisingly, the inventors found that nanodispersions of suitable composition can, in the presence of amphiphilic substances, be incorporated into cosmetic end formulations over a wide pH range in very simple manner while retaining their morphological and physicochemical properties. [See page 2, lines 3-6].

In the broadest sense, this invention relates to the preparation and use of a nanodispersion which comprises

(a) a membrane-forming molecule,

(b) a coemulsifier and

(c) a lipophilic component,

in cosmetic end formulations, the nanodispersion being obtained by

(α) mixing the components (a), (b) and (c) until a homogeneous clear liquid is obtained (so-called nanodispersion prephase), and

(β) adding the liquid obtained in step (α) to the water phase of the cosmetic end formulations, wherein steps (α) and (β)are carried out using standard stirring apparatus, for example propellers, angled paddles or magnetic agitators, and without using any special mechanical stirring aids. The particular choice and amounts of the components (a), (b) and (c) recited in claim 32 results directly in ultrafine, monodisperse nanodispersions. In this case it is possible to forego homogenisation via nozzle, rotor-stator or ultrasound homogenisers, which is usually carried out to convert coarsely disperse or at least heterodisperse systems to fine monodisperse systems. Step (β) is thus characterised by the absence of high shear or cavitation forces. [See page 2, lines 7-15, 17-19 and 23-28].

The nanodispersions characterised by the process steps (α) and (β) contain particles having an average diameter of <50 nm, typically of less than 30 nm. The distribution is monodisperse and corresponds to a Gaussian distribution. [See page 3, lines 3-5].

Components (a), (b) and (c) (= step (α)) are mixed in an anhydrous medium, i.e. it is not necessary to add any water. [See page 2, lines 20-21 and claim 33].

The coemulsifiers of the polyoxyethylene type (= component (b)) are a selection from those disclosed on page 6, line 28 to page 7, line 8.

Component (c) is particularly preferably a sunscreen or a fat-soluble vitamin. [See page 6, line 17 and claim 34].

The various physical forms of the cosmetic end formulations claimed in claims 37-43 are disclosed on page 17, lines 1-8.

A nanodispersion containing the components (a), (b), (c) and optionally (d) is distinguished by favourable phase properties of the solubilized functional cosmetic agent. Thus if there is opalescence and transparency in incident light, only a very slight turbidity shows that the dispersion is physically still different from the ideal state of a genuine molecular solution. Electron microscopic images show that a population of more than 98 % is present in a Gaussian distribution as a suspension of particles (nanoparticles) having a particle size of less than about 50 nm, typically of less than about 30 nm. However, these distinctions from a genuine solution can be tolerated because of the particularly good homogeneity properties of the dispersion which can be evidenced, for example, by a surprisingly high storage stability, e.g. no separation after storing for several months at temperatures of up to room temperature (stability to be expected by extrapolation: more than two years). [See page 14, last paragraph].

(6) ISSUES

The following issues are presented for review:

A). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 112, second paragraph.

B). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 102(b) as being anticipated by EP-A 349 150.

C). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 102(b) as being anticipated by EP-A 711 557 or WO 96/37192.

D). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over EP-A 349 150 or EP-A 711 557 or WO 96/37192 or WO 97/21428.

(7) GROUPING OF THE CLAIMS

Claims 32-33 and 35-43 do not stand or fall together. Method claims 32, 33, 35 and 36 and composition claims 37-43 are argued separately for issues A and C. Composition claims 37-43 are argued separately for issue D.

(8) ARGUMENT

A). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 112, second paragraph.

Claims 32-43, now claims 32-33 and 35-43, are rejected under 35 U.S.C. § 112, second paragraph as indefinite. The examiner comments that claim 32 recites "which steps consist essentially of" and asserts that claims 37-43 require additional steps and are therefore improper. No reason has been given for including claims 32, 33, 35 or 36 in this rejection and none is seen. Accordingly the rejection of claims 32, 33, 35 or 36 on this ground is clearly improper.

Appellants respectfully note that the process of claim 32 results in a product, which is a cosmetic formulation of a lipophilic cosmetic active agent in the form of an aqueous highly homogeneous nanodispersion having a Gaussian distribution. Composition claims 37-43 are directed to various commercial forms of products that contain the aqueous nanodispersion product *as defined in claim 32* as one of their components. Thus the product prepared by the process as defined in claim 32 is used as an intermediate to prepare the cosmetic end products of claims 37-43. The fact that these commercial forms contain the intermediate product as defined in claim 32 as one of their components does not mean that these commercial forms cannot be made without additional process steps. A composition claim is clearly not limited to the process steps used to make one of its components. Appellants aver that how the commercial forms are subsequently made from the aqueous nanodispersion product as defined in claim 32 is totally irrelevant to the subject matter of claims 37-43. Claims 37-43 do not depend on claim 32; they merely refer to this claim for a definition of a term. Appellants respectfully note that here is nothing improper or indefinite in referring to a claim of a different statutory class for a definition of a term. See *Ex parte Porter*, 25 USPQ2d 1144 (BPAI, 1992). This rejection is therefore in error as to fact and law and should be withdrawn.

B). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 102(b) as being anticipated by EP-A 349 150.

Claims 32-43 are rejected under 35 U.S.C. § 102(b) as being anticipated by EP-A 349 150. The examiner asserts that the reference discloses the instant formulations (no formulations are claimed) and method. However the examiner's discussion of claim 32 is factually incorrect.

First of all the EP reverses the order of addition, i.e. the water is added to the non-aqueous phase. Claim 32 requires adding the non-aqueous phase to the water.

Additionally, this step, wherein the non-aqueous phase and the water are mixed, is precisely where EP employs a homomixer, i.e. high shear mixing. Appellants note page 5, lines 22-25, of the EP, where a homomixer is first used, "the component 6 [deionized water, mis-numbered in Table 1 since there are two 3)s -see Table 3] was gradually added, and a pressure emulsification [of the aqueous dispersion] was carried out by a Manton Gaulin."

As is well known, a Manton Gaulin is a high-pressure nozzle homogenizer, which is typically operated at a pressure of several hundred bar (= several thousand pounds per square inch) to generate intense shear. A description of a Manton Gaulin high-pressure nozzle homogenizer is of record in the prosecution of this application. In contrast to the EP, claim 32 recites, "(β) adding the liquid obtained in step (α) to a water phase, wherein step (β) is carried out in the absence of high shear or cavitation forces". Thus the EP clearly fails to anticipate the claimed subject matter. This rejection is therefore in error as to fact and law and should be withdrawn.

Claims 32-43 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over EP-A 349 150. Since the EP clearly teaches and exemplifies use of a homomixer, i.e. high shear mixing, in the step wherein the non-aqueous phase and the water are mixed, while process claim 32 requires the absence of high shear or cavitation forces, the EP clearly *teaches away* from the claimed invention. How can it be obvious, from a reference, to do the exact opposite of what it teaches? Additionally the cosmetic forms of claims 39-43 are unsuggested. This rejection (= issue D) below) is therefore also in error as to fact and law and should be withdrawn.

C). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 102(b) as being anticipated by EP-A 711 557 or WO 96/37192.

The examiner has acknowledged that Weder et al., U.S. Patent 5,658,898, which appellants supplied, is substantially equivalent to EP-A 711 557, yet merely repeated the statement, "This rejection will be reconsidered upon submission of an English translation". Appellants respectfully note that since all

U.S. Patents are in English, there is absolutely no basis for refusing to consider and respond to appellants' earlier remarks.

Weder et al. is directed to a novel pharmaceutical dosage form for intravenous delivery of sparingly soluble staurosporin derivatives. Weder et al. neither teaches nor suggests using ethanol (= instant component (d)). Hence there is a missing claim element. Moreover, the subsequent mixing of the non-aqueous phase and water is with a Rannie High-Pressure Laboratory Homogenizer for 75 minutes at about 600 bar (see col. 9, lines 40-49). Therefore, EP A 711 557 clearly neither teaches nor suggests the inventive process of claims 32, 33, 35 and 36, or the product-by-process cosmetic forms of claims 37-43 obtainable therefrom. Hence both this rejection and the obviousness rejection (= issue D) below) are therefore in error as to fact and law and should be withdrawn.

D). Whether claims 32-43 [now 32-33 and 35-43] are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over EP-A 349 150 or EP-A 711 557 or WO 96/37192 or WO 97/21428.

The rejections under 35 U.S.C. § 103(a) as being unpatentable over EP-A 349 150 or EP-A 711 557 have been discussed *supra*.

Re WO 96/37192, this publication is directed to the preparation of the pharmaceutical or cosmetic compositions comprising a sparingly soluble sphingolipid or glycolipid. Said compositions comprise:
a) a sphingolipid or glycolipid,
b) a phospholipid,
c) a partial fatty acid ester of polyoxyethylene sorbitan,
d) a carrier liquid,
e) a therapeutic agent,
f) a triglydceride and
g) a water-soluble or lipid-soluble additive. [See pages 4-5].

Essential component c) of these compositions is a partial fatty acid ester of polyoxyethylene sorbitan such as Tween 80. See page 26, last line and the discussion starting at page 11, line 1 and ending at page 12, line 3. Polyethoxylated sorbitan fatty acid esters such as Tween 80 are outside the claimed scope. The WO fails to teach or suggest any component (b) as presently claimed. Since WO 96/37192 neither teaches nor suggests how to make a nanodispersion without using a partial fatty

acid ester of polyoxyethylene sorbitan, it is incapable of suggesting the present invention as a whole. The cosmetic forms of claims 39-43 are also unsuggested.

Additionally, the carrier liquid d) is "water optionally admixed with C_2-C_4-alkanol" (page 13, line 5 of the WO). WO teaches to use 1 to about 10% of ethanol for injectable pharmaceutical formulations, but for cosmetic formulations, ethanol, isopropanol or mixtures thereof may be optionally admixed as C_2-C_4-alkanol. The amount of C_2-C_4-alkanol to use for cosmetic formulations is from 0.1 to about 10 %, with 0.1 to 2.0 % being preferred (page 13, lines 15-18). Hence the use of ethanol to form an aqueous dispersion is an optional expedient in WO.

On page 18, first paragraph of the WO, the preparation of the pharmaceutical or cosmetic compositions is disclosed. The process consists of 2 steps:

1. mixing components a), b), c) and d) and the optional components e), f) and g) and subjecting the dispersion to the steps

2. α) addition of water (carrier), or

   β) filtration and optionally dialysis and subsequent conversion of the dispersion into a dry preparation, or

   γ) further processing the dispersion to the intended pharmaceutical dosage.

WO 96/37192 teaches to reverse the order of addition recited in claim 32, i.e. to add the water to the prephase rather than to add the prephase to the water as claimed. Additionally, essential component c) of the reference compositions, a partial fatty acid ester of polyoxyethylene sorbitan such as Tween 80, is outside the scope of the present invention. Hence the rejection under 35 U.S.C. § 103(a) as being unpatentable over WO 96/37192 is clearly erroneous. This rejection is in error as to fact and law and should be withdrawn.

Re WO 97/21428, appellants previously supplied a copy of CA 2,238,263, which is an English language equivalent of WO 97/21428. As the examiner acknowledges, this reference teaches pharmaceutical compositions comprising, as essential component b), a partial fatty acid ester of polyoxyethylene sorbitan such as Tween 80. See page 7, line 17 through page 9, line 5. Polyethoxylated sorbitan fatty acid esters such as Tween 80 are outside the claimed scope. No other emulsifiers are suggested. Hence WO 97/21428 (= CA 2,238,263) neither teaches nor suggests the presently claimed invention. The cosmetic forms of claims 37-43 are also unsuggested. This rejection is therefore in error as to fact and law and should be withdrawn.

(9) CONCLUSION

In light of the above remarks, appellants aver that the rejections under 35 U.S.C. § 112, second paragraph, 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) are each in error as to fact and law and should be REVERSED.

Respectfully submitted,

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Attachments: Fee Letter; Petition for Extension of Time; Appendix, Claims on Appeal

(9) APPENDIX

The claims on appeal are:

32. A method of preparing a cosmetic formulation of a lipophilic cosmetic active agent in the form of an aqueous nanodispersion, which steps consist essentially of

(α) mixing the components

(a) 0.1 to 30 % by weight of a phospholipid,

(b) 1 to 50 % by weight of a polyoxyethylene coemulsifier selected from the group consisting of polyethoxylated fatty alcohols, polyethoxylated fatty acids, polyethoxylated vitamin E derivatives, polyethoxylated lanolin and derivatives thereof, polyethoxylated fatty acid partial glycerides, polyethoxylated alkylphenols, polyethoxylated fatty alcohols and salts thereof, polyethoxylated fatty amines and fatty acid amides and polyethoxylated carbohydrates,

(c) 0.1 to 80 % by weight of a lipophilic component which is a natural or synthetic or a partially synthetic C_4-C_{18}triglyceride and a lipophilic cosmetically active agent, in which any cosmetically active agent is lipophilic and is always present in component (c), and

(d) 7.40 to 14.2 % by weight of ethanol,

with conventional stirring apparatus until a homogeneous clear liquid is obtained, and

(β) adding the liquid obtained in step (α) to a water phase, wherein step (β) is carried out in the absence of high shear or cavitation forces, and wherein the particles in the nanodispersion have an average diameter of <50 nm.

33. A method according to claim 32, wherein step (α) is carried out in an anhydrous medium.

35. A method according to claim 32, wherein the nanodispersion comprises as component (c) a sunscreen or a fat-soluble vitamin.

36. A method according to claim 32, wherein the nanodispersion is present in the cosmetic formulation in a concentration of 0.01 to 99 % by weight.

37. A cosmetic formulation in the form of a gel having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

38. A cosmetic formulation in the form of a cream, lotion or milk having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

39. A cosmetic formulation in the form of a stick having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

40. A cosmetic formulation in the form of a spray or aerosol having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

41. A cosmetic formulation in the form of a foam having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

42. A cosmetic formulation in the form of a paste having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent.

43. A cosmetic formulation in the form of a powder, lacquer, pellet or cosmetic make-up having incorporated therein a nanodispersion as defined in claim 32 comprising a lipophilic cosmetic active agent in which the nanodispersion is present in dehydrated form.